IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventors: Joachim LOHR, et al.

Appln. No.: National Phase of PCT/EP2005/000145

Filed: July 21, 2006

For: METHOD OF HARQ RETRANSMISSION TIMING CONTROL

PETITION TO MAKE SPECIAL

Assistant Commissioner of Patents
Washington, DC 20231

Sir:

The Applicants respectfully petition that the above-captioned application be granted special status. The requirements of MPEP section 708.02(VIII) are complied with as follows:

(1) The petition fee set forth in 37 CFR 1.17(i) is authorized to be charged to Deposit Account No. 19-4375.

(2) All pending claims (claims 24-40) of the present application are believed to be directed to a single invention; if the Office determines that all the claims presented are not obviously directed to a single invention, the Applicants agree to make an election without traverse as a prerequisite to the grant of special status.

(3) A pre-examination search has been made in the form of a search report in a counterpart PCT International Application (International Search Report dated April 13, 2005). Under MPEP 708.02, VIII, a search made by a foreign patent office satisfies the search requirement. An Information Disclosure Statement directed to the references cited in the ISR was filed on July 21, 2006.

Also, a pre-examination search has been made, and an Information Disclosure Statement directed thereto is attached. The field of search is:

Class 370, subclasses 252, 278, 282, 437 and 468; and

Class 714, subclasses 748 and 749.

Examiner John Pezzlo was consulted for the above field of search.

(4) One copy each of the prior art deemed most closely related to the subject matter encompassed by the claims is of record in the form of the art cited in the Information Disclosure Statement filed herewith.

(5) The following is a detailed discussion of the art of record, and comments pointing out how the instant claimed subject matter is patentably distinguishable thereover.

A. Discussion of All References of Record

D. Chase: "Code combining: A maximum-likelihood decoding approach for combining an arbitrary number of noisy packets", IEEE Transactions on Communications, Col. COM-33, pages 385 to 393, May 1985 discussed in the paragraph at application page 2, fifth paragraph, states that in chase-combining, retransmission packets carry identical symbols, and multiple received packets are combined either by a symbol-by-symbol or by a bit-by-bit basis and are stored in the soft buffers of respective HARQ processes.

3GPP TR 25.401, "UTRAN Overall Description" discussed in the paragraph bridging application pages 3 and 4, discloses the high level R99/4/5 architecture of Universal Mobile Telecommunication System (UMTS), as shown in application Fig. 1.

3GPP TR 25.896, "Feasibility Study for Enhanced Uplink for UTRA FDD (Release 6)" discussed at application page 4, second full paragraph, discusses uplink enhancements for Dedicated Transport Channels (DTCH).

3GPP TSG RAN WG1, meeting #31, Tdoc R01-030284, "Scheduled and Autonomous Mode Operation for the Enhanced Uplink" discussed at application page 5, second full paragraph, describes a new MAC sub-layer called MAC-e.

3GPP TSG RAN WG 1, meeting #31, "HARQ Structure", Tdoc R1-030247, is discussed at application page 6, second full

paragraph. Every MAC-e entity corresponds to a user (UE), and application Fig. 6 depicts the base station (Node B) MAC-e architecture. Fig. 7 shows the S-RNC MAC-e architecture which comprises the reordering buffer of the corresponding user (UE). The number of reordering buffers is equal to the number of data flows in the corresponding MAC-e entity on the UE side. Data and control information is sent from all Node Bs within the active set to S-RNC during soft handover.

3GPP TR 25.896, "Feasibility study for Enhanced Uplink for UTRA FDD (Release 6)" is discussed in the paragraph bridging application pages 7 and 8. Due to Node B being unaware of the number of UEs transmitting at the same time, no precise control of the uplink noise rise in the cell may be possible.

3GPP TR 25.848: "Physical Layer Aspects of High Speed Downlink I Packet Access", version 5.0.0, discussed at application page 11, fourth full paragraph, states that HARQ feedback information may sent on the HS-DPCCH after a certain time instant upon having received the HS-DSCH.

3GPP TSG TAN WG1#35: "Relationship between scheduling and HARQ", Tdoc R1-031224, discussed in the paragraph bridging application pages 11 and 12, states that a retransmission protocol with asynchronous data transmission may enable a Node B to have more scheduling flexibility. The scheduling assignment may for

example be based on the scheduling information sent from a UE and the interference situation in the cell. The different scheduling approaches considering retransmissions have to be taken into account, in order to enable further control of the uplink interference by the Node B scheduler.

EP 1 545 040 "HARQ Protocol with Synchronous Retransmissions" (application serial no. 03029411.0, filed on December 19, 2003) discussed at application page 12, first full paragraph, states that a retransmission protocol with asynchronous uplink but synchronous retransmissions allows the scheduler more control on the noise rises in the cell. The transmission of new data packets on an E-DCH is sent in an asynchronous manner in order to keep the advantage of scheduling flexibility, although retransmissions are sent after a predefined time instant upon having received the NACK.

US 2002/168945 discloses a radio communication system in which a receiving side composes an ACK or NAK signal that is generated depending on the presence of error in received packet data and reception quality. The NAK signal may include additional control information which can be related to one of time delay, sending power, or multi-code number.

US 2002/191544 discloses a mobile communication system that employs a retransmission function, a re-sequencing function, or both functions. A mobile station includes a retransmission

function and one or more re-sequencing functions. The retransmission function receives at least one Protocol Data Unit (PDU) from, for example, a base station where each PDU having an associated sequence number for the PDU, identifies a missing PDU by checking the sequence number of each received PDU, issues a retransmission request to the base station for the missing PDU, and sends an abort message for the missed PDU to a re-sequencing funciton whenever a maximum number of retransmission requests for the missed PDU is reached.

US 2002/053058 discloses a Hybrid ARQ scheme in which packet data re-transmission requests depend upon an index representative of how much the packet data being transmitted for the first time is damaged. A comparison is made of an index representing how much the first packet is damaged to a predetermined threshold value if an error occurs. A request is made to transmit an additional packet encoded with a lower code rate if the index is greater or equal to the threshold value, while a request is made to re-transmit the first packet if the index is less than the threshold value.

WO03030438A1 discloses a HARQ PDU data retransmission technique in which PDU data queues are established, for storing PDU data corresponding to TTL data blocks which have not yet been transmitted successfully in the physical layer. The system schedules retransmission of PDU data and TTI data blocks stored in

the physical layer which are not transmitted successfully within HARQ maximum retransmission times. The PDU data packets which are not transmitted successfully beyond the HARQ maximum retransmission times are returned and stored in the retransmission PDU data queues. The PDU data in the PDU data queues are scheduled, modulated, encoded and sent in accordance with new channel conditions in the physical layer.

WO 02082828A3 discloses a method for transmission of data blocks between radio stations in a radio communication system, whereby several radio stations use a common return channel.

US 2002/0071407 discloses retransmitting packet data through a new retransmission channel different from a channel used during initial transmission in a HARQ scheme. Packet data and side information are transmitted including a sequence number of the packet data. The packet data and the side information are transmitted over a dedicated channel during the initial transmission and transmitted over a common channel during the retransmission.

US 2005/141446 teaches a technique applicable during soft handover of varying the transmission rate of the pilot in response to the transmission rate of the transmission data ACK/NACK or QI, and transmitting the pilot when neither the ACK/NACK nor QI is transmitted. The data including the pilot data are transmitted

uninterruptedly throughout the HS-DPCCH, and the fluctuations in the channel power of the HS-DPCCH and the total transmit power of the mobile station become smaller.

B. Discussion of How the Claimed Invention Patentably Distinguishes over the References of Record

It is submitted that the references cited above, considered either alone or in combination, fail to disclose or suggest at least the following subject matter:

(a) control of transmission timing of data retransmissions in a HARQ protocol with synchronous retransmissions, wherein a receiving entity (1) transmits a NACK feedback message to indicate to a first transmitting entity to retransmit a retransmission data packet for an unsuccessfully decoded received data packet after a predetermined time span upon having received the feedback message, (2) schedules data transmissions of a plurality of transmitting entities which include the first transmitting entity, and (3) transmits a common control message to the plurality of transmitting entities which include the first transmitting entity, with the common control message restricting the transmission format combination subset of each of the plurality of transmitting entities to determine a maximum resource common to the plurality of transmitting entities (independent claims 24 and 28); and

(b) control of transmission timing of data retransmissions in a HARQ protocol with synchronous retransmissions, wherein a transmitting entity (1) receives (i) a feedback message from a receiving entity relating to a data packet transmitted to the receiving entity and (ii) a common control message, (2) retransmits the data packet to the receiving entity after a predetermined time span upon having received the feedback message, and (3) restricts the transmission format combination subset of the mobile terminal to determine a maximum resource according to the common control message (independent claims 32 and 36).

It is submitted that each of the references of record lacks any teaching or suggestion of a common control message sent to plural transmitting entities which include a transmitting entity which receives a NACK feedback message, with the common control message restricting the transmission format combination subset of each of the plurality of transmitting entities to determine a maximum resource common to the plurality of transmitting entities. It is submitted that there is nothing in the combined teachings of these references that would have rendered such subject matter obvious to those skilled in the art.

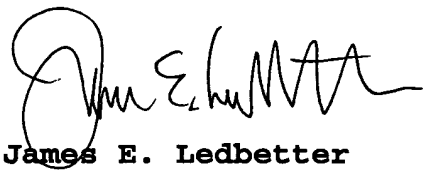
Thus, the Applicants submit that the above-noted combinations of features of the independent claims are not taught or suggested by the combined teachings of the art of record, and thus the

independent claims, and all claims dependent therefrom, are patentable.

Accordingly, in light of the foregoing discussion pointing out how the claimed invention distinguishes over the cited references, the Applicants respectfully submit that the inventions of all the presently pending claims are not anticipated by these references and would not have been obvious over any combination thereof.

Grant of special status in accordance with this petition is respectfully requested.

Respectfully submitted,



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